BLM Renewable Energy Summit

Marriott Las Vegas | Aug 31 – Sep 3, 2009



Company Overview

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FS Mission Statement

To create enduring value by enabling a world powered by clean, affordable solar energy

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Company Overview

Global Presence: > 4,000 Associates

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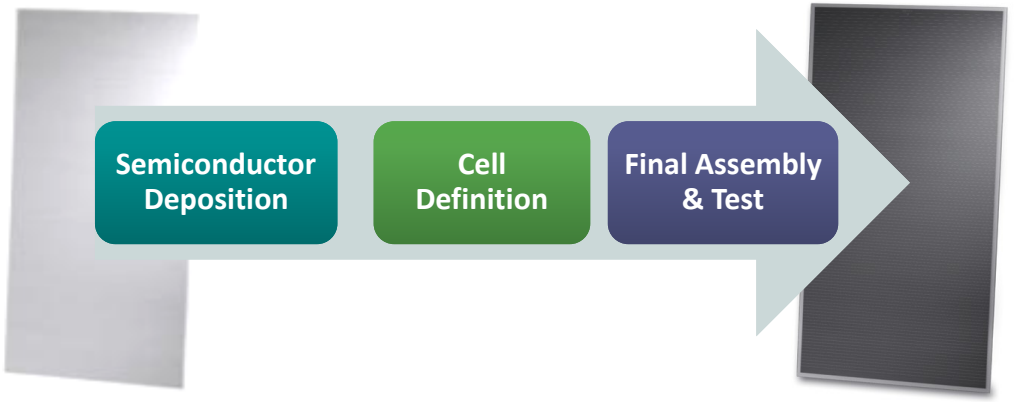
First Solar Manufacturing Process

Background

- Formed in 1999 to commercialize an advanced semiconductor technology for producing low cost solar modules
- Developed the technology from 1999 to 2004
- Increased annual production capacity by 50X from 20MW in 2005 to 1,000MW capacity in 2009
- Used opportunities provided by subsidies in Germany and other European markets to
  - gain commercial scale
  - reduce costs
  - establish a sustainable environmental profile

Glass In→ Manufacture < 2.5 Hours →Module Out



- Breakthrough thin film process technology
- 99% reduction in high-cost semiconductor material
- Fully integrated, continuous process vs. batch process
- Large (2'x4') substrate vs. 6" wafers

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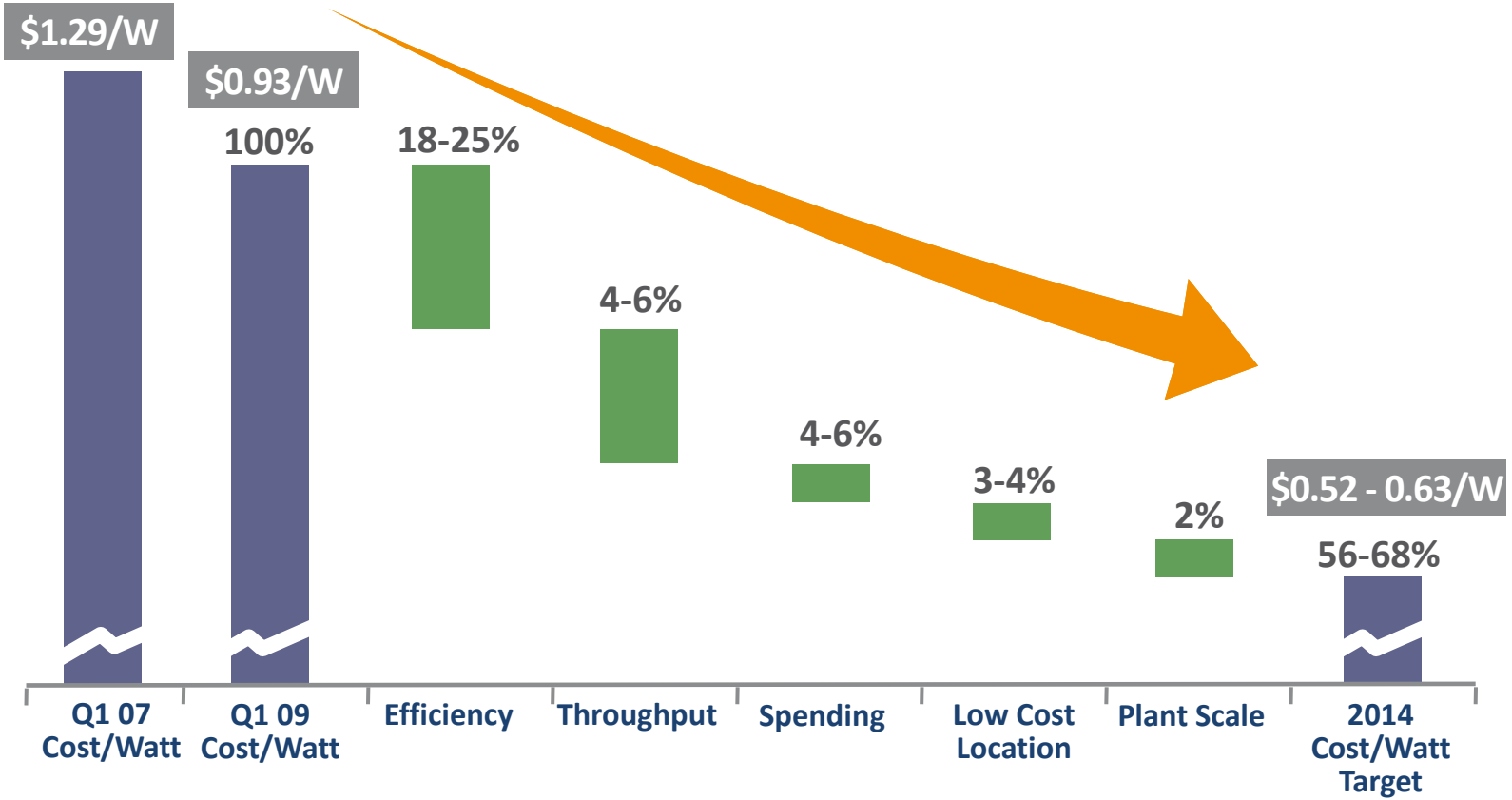
Cost Reduction Roadmap

Module Manufacturing (USD per watt)



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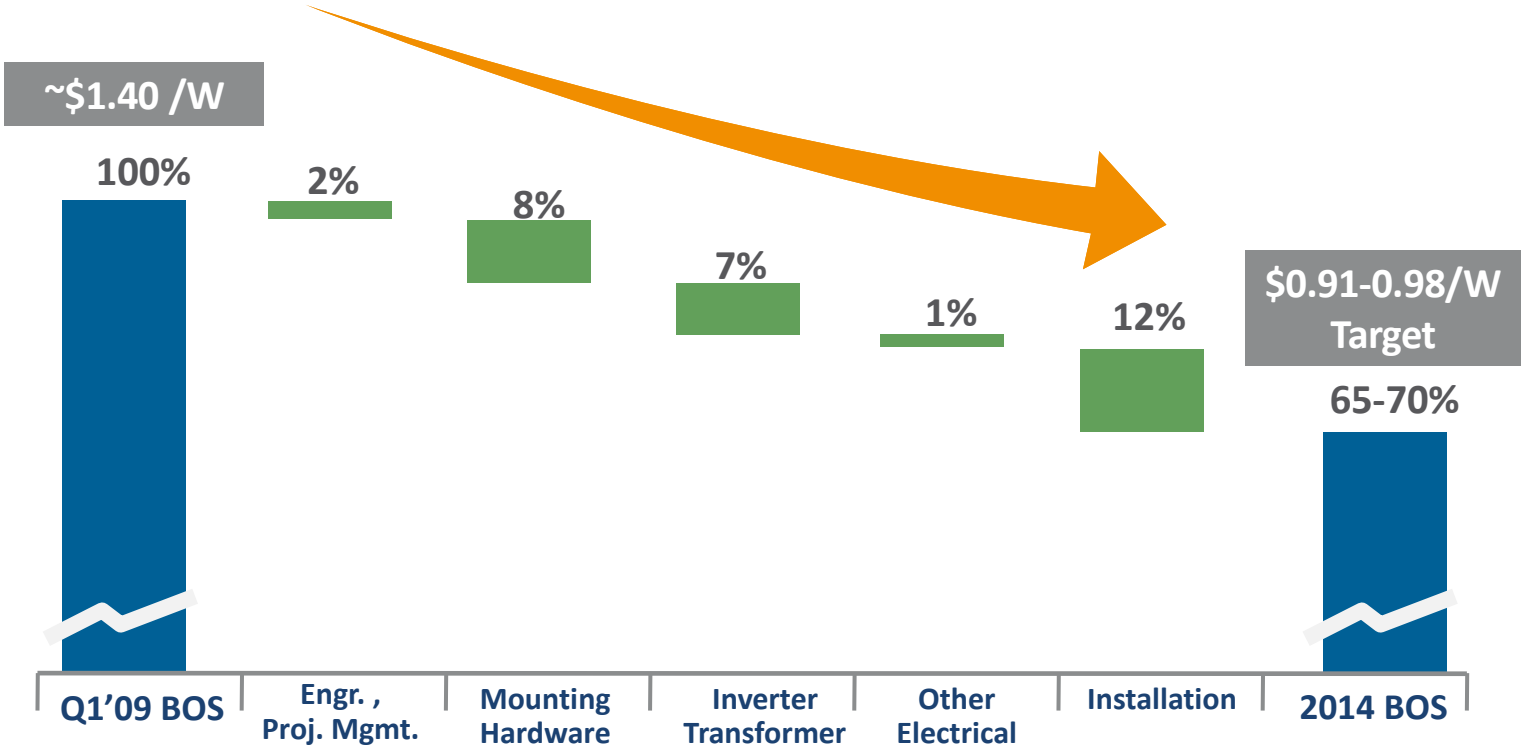
Cost Reduction Roadmap

Balance of System*



* Excludes Site Specific costs, BOS profits, sales tax, finance costs, SG&A costs and project development costs and assumes optimal labor costs

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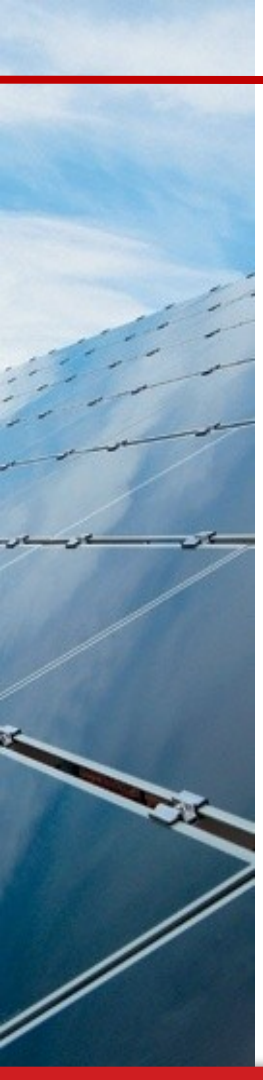

Environmental Responsibility

Our 3-Point Environmental Plan

1. Convert mining byproducts and waste to clean, renewable energy
2. Produce, use and renew solar modules in a perpetual, environmentally safe life cycle
3. Reduce toxic emissions by substituting solar energy for fossil fuels

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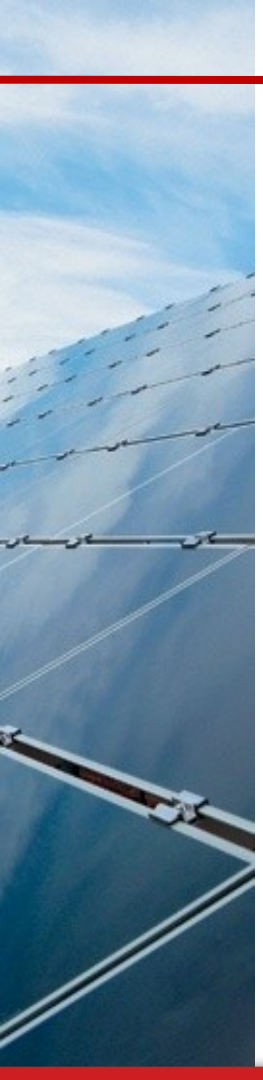

Environmental Responsibility

Collection & Recycling Program

Module Collection

- Anyone in possession of a First Solar module can participate in the program and request that Modules be taken back at any time
- Modules are labeled with web site and telephone contact information
- First Solar manages the logistics of taking back Modules and provides the packaging and transportation of Modules to the recycling center

Module Recycling

- Modules undergo treatment through schemes that comply with local regulations regarding health, safety, and waste management
- First Solar finances the cost of the program by pre-funding the expected costs with an international insurance company
- Results of the program are audited for continuous improvement

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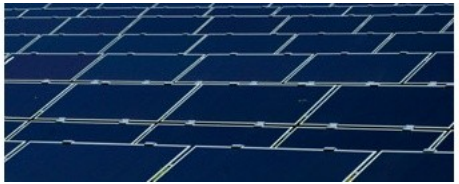


"President Obama's comprehensive energy strategy calls for rapid development of renewable energy, especially on America's public lands." Ken Salazar, Secretary of the Interior

Source: Department of the Interior, "Secretary Salazar, Senator Reid Announce 'Fast-Track' Initiatives for Solar Energy Development on Western Lands," press release, June 29, 2009. Available from: http://www.interior.gov/news/09_News_Releases/062909.html.

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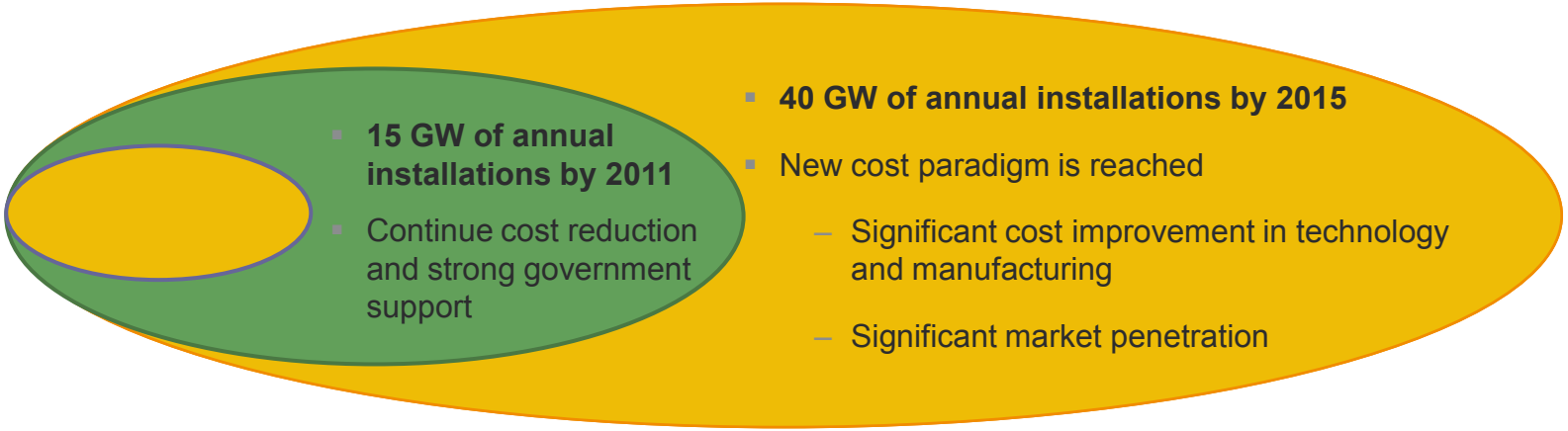
Solar Is Ready to Make a Difference

By 2015 annual demand for solar could reach 40 GW



Source: "World PV Market Update," Prometheus Institute, March 2008; "Solar Energy," Lehman Brothers, March 2008

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Solar Energy: Same Solar Resource – Different Technologies

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Impact on Habitat / Species

PV Site Development Options

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Improved Wildlife Habitability (Topaz)

- Steel-post panel mountings instead of concrete ballasts
  - Reduced impermeable surface
  - Greater permeability for species
  - 18-inch ground clearance provides unencumbered line of sight for Kit Fox

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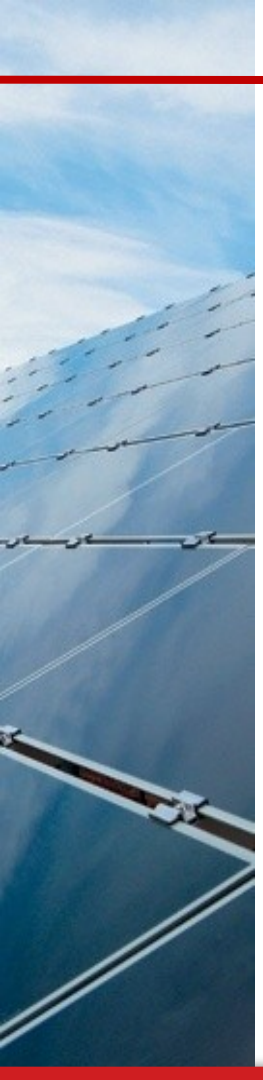

Land Use Life-cycle Analysis

Many things to consider for each technology…

<u>Non-renewable Electricity Generation</u>

- Nuclear
  - Power plant + perimeter safety buffer
  - Nuclear waste disposal
  - Fuel extraction, milling, enrichment
- Natural gas
  - Fuel transport
  - Fuel extraction
  - Fuel storage
  - Power plant
- Coal
  - Mining/Fuel extraction
    - Strip/surface vs. underground
  - Fuel transport
  - Solid waste disposal
  - Power plant

More energy, Less land

Less energy, More land

<u>Renewable Electricity Generation</u>

- Solar PV
  - Power plant footprint
  - Power plant materials production
- Wind
  - Power plant footprint
  - Power plant materials production
- Hydro
  - Water reservoir
    - Varies widely: reservoir vs. run-of-river; wide/shallow reservoir vs. narrow/deep reservoir
  - Power plant
- Biomass
  - Crop land
  - Fuel conversion refinery (ethanol)
  - Power plant

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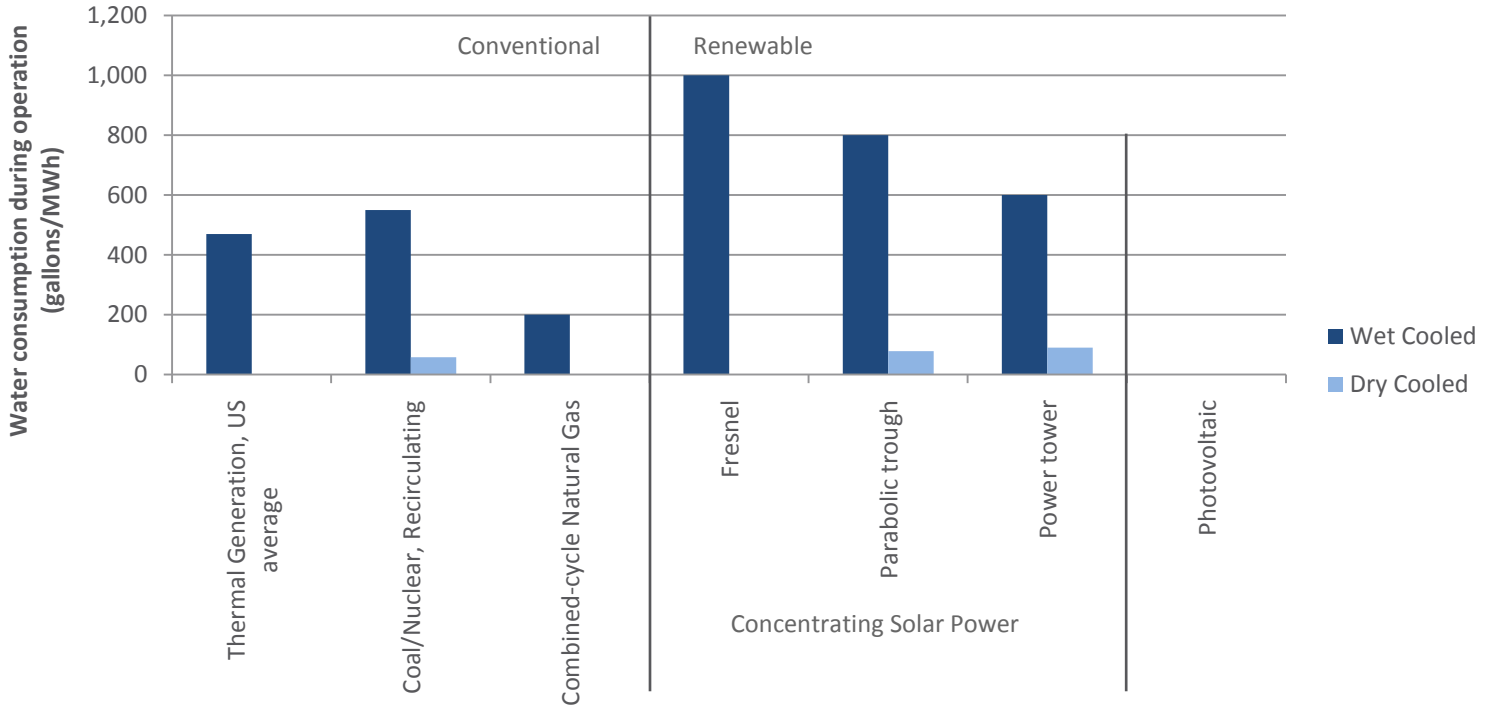
Water Usage

"Thermoelectric power has been the category with the largest water withdrawals since 1965, and for 2000 comprised 48 percent of total withdrawals (in the US)" - *US Geologic Survey*



Source: US Department of Energy, US Geologic Survey

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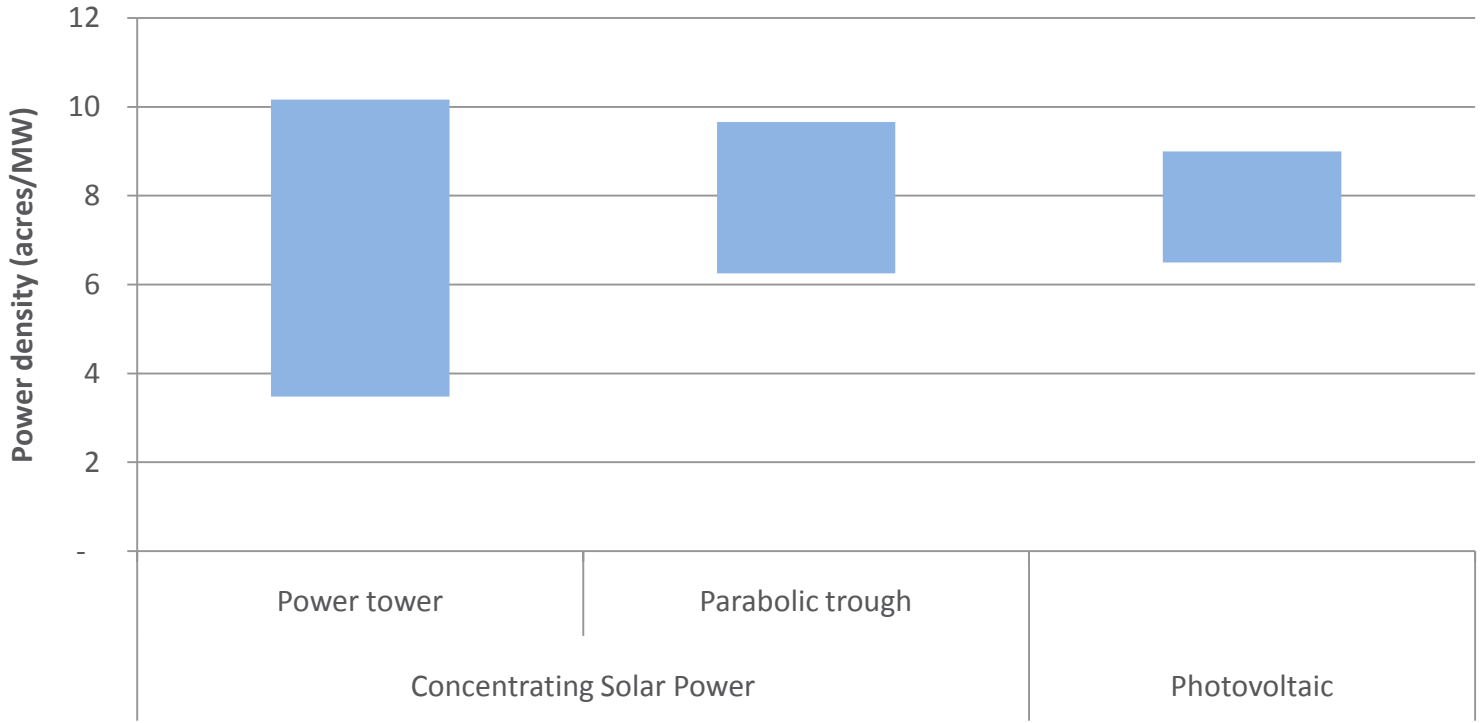
Power Density



Source: Industry data

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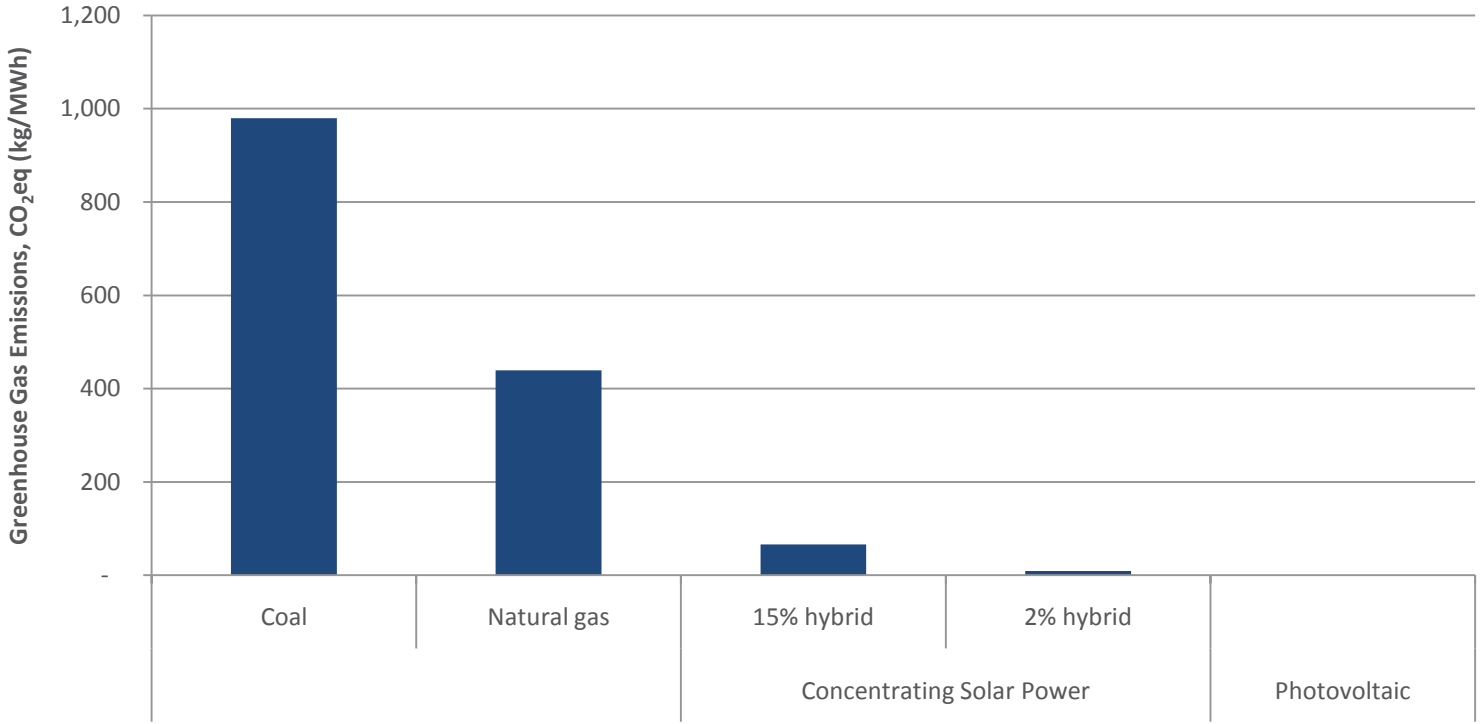
Greenhouse Gas Emissions



Note: Based on US national average GHG emissions (EPA eGrid database) and EPA CO_2eq factors

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State of Project Finance and Project Risk Management

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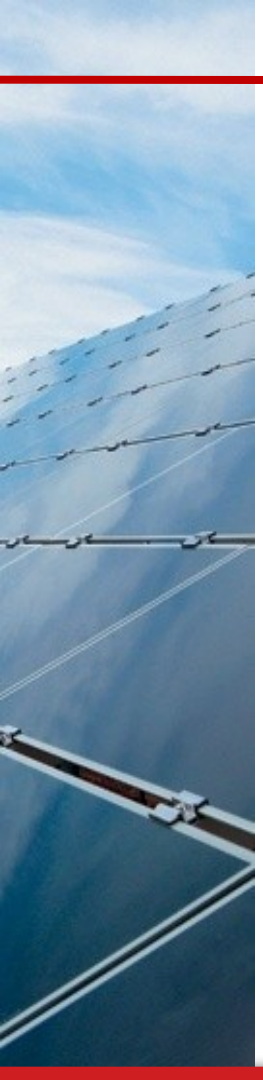

Developer Opportunities

- Avoid highly sensitive environmental areas
- Use of previously disturbed non-prime agricultural land where transmission paths allow
- Minimize site disruption
- Enable potential compatibility with key wildlife species on-site
- Use of on-site and off-site mitigations to reduce wildlife impacts
- Minimize water use in construction and operation
- Minimize visual obtrusiveness (e.g., low-profile technologies, buffer zones)

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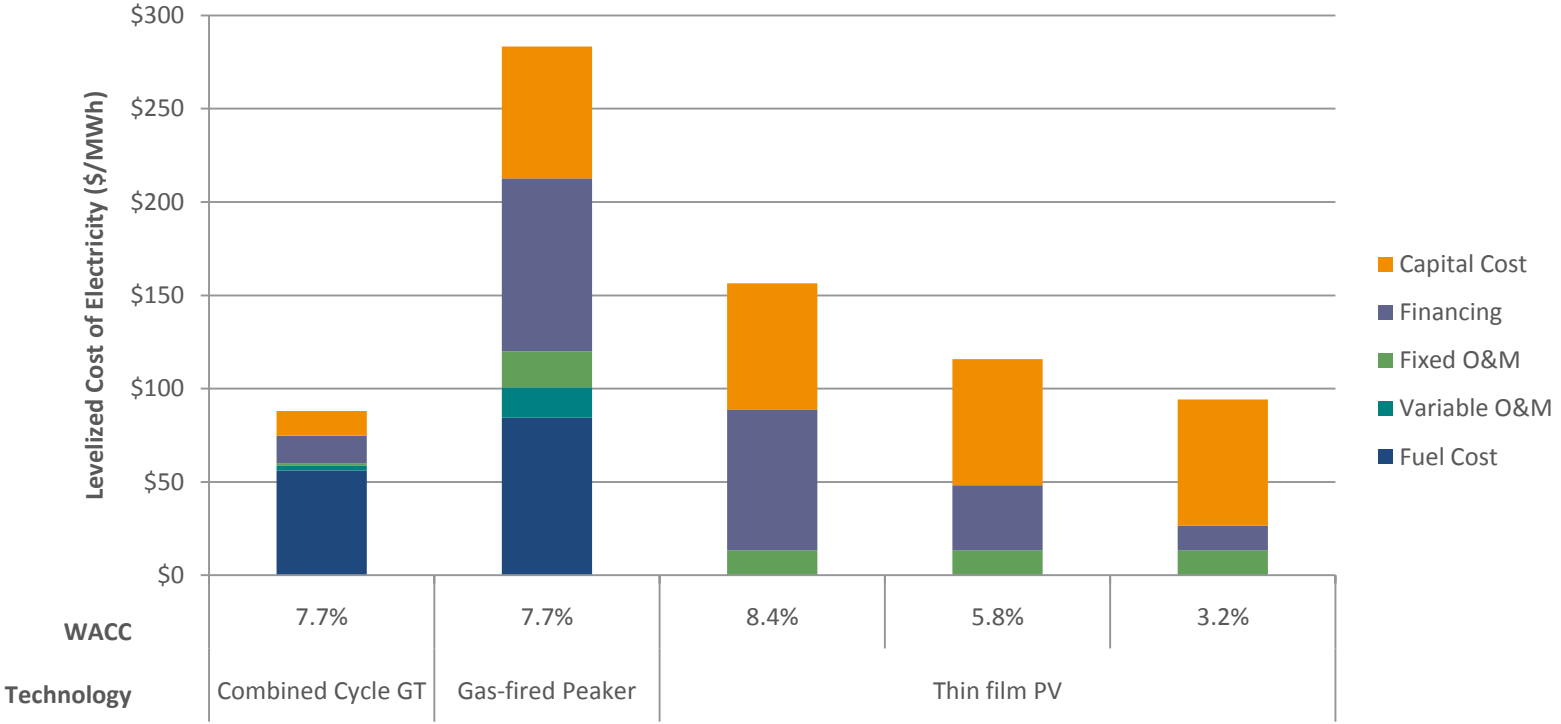
Solar Project Finance



Source: "Levelized Cost of Energy Analysis – ver 3.0", Lazard

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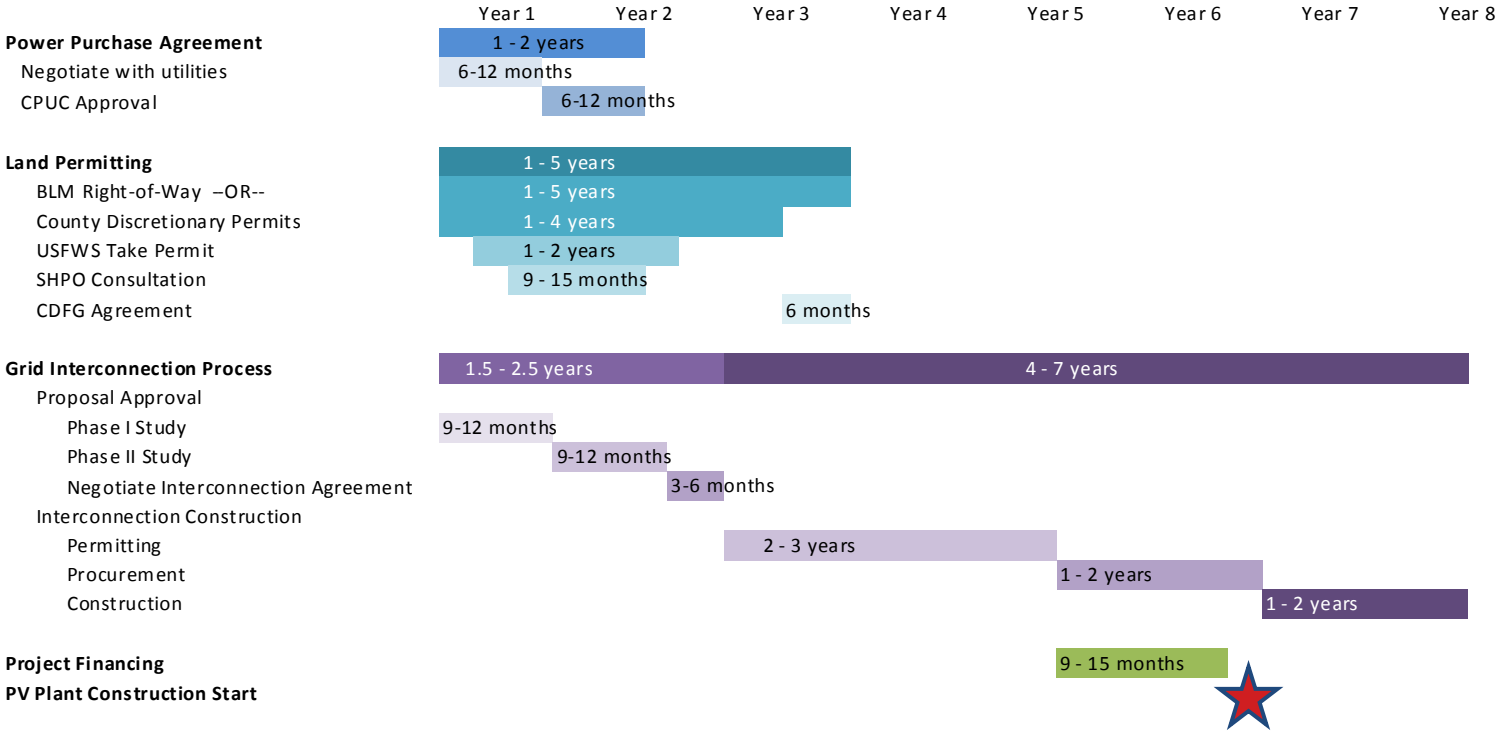
California Generic Project Development Timeline

Project identification to construction start typically takes 5 – 9 years



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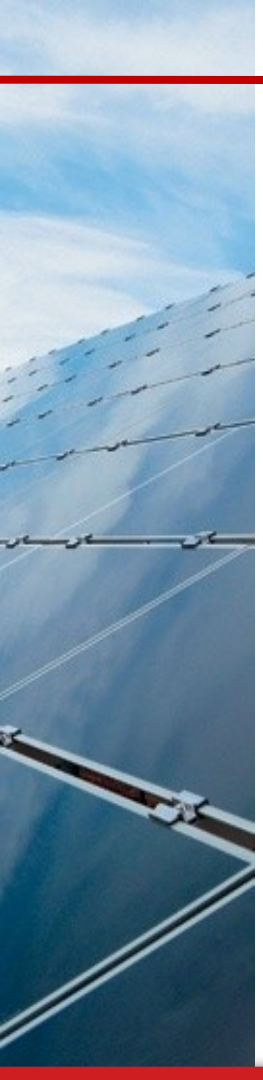

Agency Opportunities

- Coordinate state, regional, and national transmission and renewable energy planning efforts
- Coordinate permit approvals (federal, state, local) to minimize duplicative efforts
- On federal lands, provide clear direction for wildlife impact mitigation plans
  - Use established Resource Management Plans where appropriate to avoid "run away mitigation"
- Allow flexibility in mitigation options
  - Expanded pool of land conservation organizations
  - In-lieu fees
  - Land banks
- Recognize that all technologies “are not created equal” and prioritize projects with multiple environmental benefits
- Staff field offices appropriately to deal with the renewable energy “gold rush”

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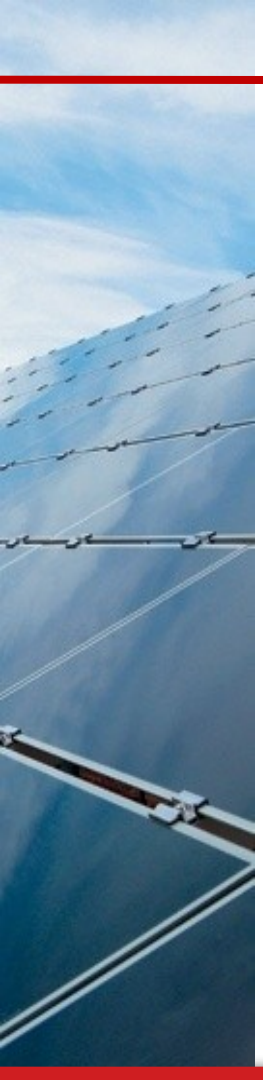

BLM'S SOLAR ENERGY STUDY AREAS AND PEIS

Context

- Final PEIS not expected until 2011, reducing relevance for near term projects
- Essential that resources not be shifted away from pending applications
- SESAs and Solar Energy Zones (SEZs) must be fast-track areas, *not* exclusive solar areas, as BLM has agreed

Comments

- SEZS are useful only if they shorten project-specific permitting. BLM must assure that local offices allow EAs instead of EISs in those Zones
- Analysis of environmental impacts should consider range of technologies
- The number of proposed SESAs needs to be expanded to include:
  - ¤BLM land adjacent to private lands
  - ¤Areas where DWMAs and ACECs allow some development
  - ¤Currently restricted lands where further study could yield good solar projects
- As Senator Feinstein as recently said, BLM lands are not the only lands at issue: DOI and BLM should work with FWS to accelerate consultation on private lands

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